

REMARKS

Claims 1-8, 10, 11-17, 23-26 and 53-59 remain in the application. Claims 1-8, 11-17, and 23-26 are rejected. Claim 10 is objected to. Claims 1 and 24 have been amended. Applicants respectfully request reconsideration of the rejections set forth in this Office Action in light of the following remarks.

Applicants also acknowledge allowability of claim 10 if rewritten in independent form, but believe all pending claims to now be allowable.

Claims 53-59 were added in the Amendment dated Sept. 18, 2002 and further acknowledged in the Amendment filed Feb. 4, 2003 and the current amendment. These claims have not been acknowledged in the office actions mailed on November 4, 2002 or May 7, 2003. Applicant please asks the Examiner to confirm whether these claims have been considered.

Rejections under 35 U.S.C. § 112

Claims 1 and 24 have been amended for the purposes of clarification. Claims 1-8, 10-17 and 23-26 are amended to indicate the pre-strain results from “stretching a finished portion of the polymer” and “fixing the stretched finished portion of the polymer in place at the first area” using a support structure. Claim 24 has been amended to recite “wherein the portion deflects with a linear strain between about 50 percent and about 215 percent between the first length and the second length in response to the change in electric field during operation of said transducer; a support structure for securing the polymer during the deflection between the first position and the second position.” Thus, Applicant now believes it is clear in the claims as amended that the pre-strain does not occur during manufacturer and the rejection is believed overcome thereby.

Rejections 35 U.S.C. § 103

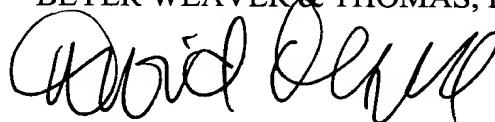
Claims 1-8, 11-17, 23-26 are rejected under 35 U.S.C. §103(a) as being unpatentable over Pelrine “Electrostriction of Polymer Films for Microactuators” in view of Scheinbeim, Lemonon or Ravinet. Applicant respectfully traverses.

As recited by the Examiner, "Pelrine does not explicitly teach pre-stress of between 1.5 to 50 times the original dimensions and does not explicitly teach linear strain of 50% and 215%." Scheinbeim, Lemonon and Ravinet each teach stretching a material during manufacture of the material. Large deformations of the finished material does not occur when the finished material is used in a device.

The combinations of Pelrine and Scheinbeim, Lemonon or Ravinet do not teach or suggest, in a transducer using a polymer, as described in claim 1 of the present invention, to stretch "a finished portion of the polymer by a factor in the range of about 1.5 times to 50 times to improve the mechanical response" of the transducer during operation. Also, the combinations of Pelrine and Scheinbeim, Lemonon or Ravinet do not teach or suggest, as described in claim 24, in a transducer using a polymer, deflecting the polymer "with a linear strain between about 50 percent and about 215 percent during operation of said transducer." Further, the combination of references does not provide any motivation for operating the devices with such large strains. As previously described in the Amendment dated Feb. 4, 2003 in response to the office action of November 4, 2002, Applicant respectfully asks the Examiner to consider that, in the present invention, the improved mechanical response of the device resulting from pre-strain of the polymer or operating the polymer at high strains was an "unexpected result" not described in the prior art and not a result of routine experimentation for the purposes of optimization. Therefore, for at least these reasons, Applicant believes that the combinations of Pelrine and Scheinbeim, Lemonon or Ravinet can't be said to render obvious claims 1-8, 11-17, 23-26 and 53-59 and the objection is believed overcome thereby.

Applicant believes that all pending claims are allowable and respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
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